



# HortiMaX Pyrgeometer

- Accurately controls your screens based on the outgoing radiation
- Lets you anticipate heat loss, so the pipe temperature can be adjusted accordingly
- Prevents surprises on your energy bills

# Save energy by measuring the outgoing radiation at night



**When the skies are clear, outgoing thermal radiation (or heat loss) from your glasshouse is higher than at the same outside temperature in cloudy conditions. This means that during clear nights, the thermal screens should be closed sooner than when it's overcast. Outgoing radiation is measured with a pyrgeometer. Once it's connected to your climate computer, you can program the thermal screens to close based on the outgoing radiation.**

A pyrgeometer measures the outgoing radiation in the infrared light spectrum (4.5 to 40 $\mu$ m). The net outgoing for radiation is expressed in W/m<sup>2</sup> (the same unit used for the incoming solar radiation, or sunlight). The sensor is extremely precise and has a standard deviation of only 1%. Its measurements are also compensated for temperature.

## Current practice

Climate computers control various processes based on the incoming solar radiation during the day. Both the initial calculations and the actual control actions are carried out using the sunlight measurements from a pyranometer. At night, this parameter is obviously not available, since there is no sunlight to measure. As a result, climate control during night time is mainly based on the outdoor temperature, indoor ambient temperature, relative humidity and humidity deficit (other parameters are wind speed, precipitation and, if applicable, plant temperature). The indoor ambient temperature and, more importantly, the plant temperature are mainly affected by the outgoing radiation.

## Automatic screen adjustment

The Pyrgeometer enables your thermal screens to be opened or closed based on the level of outgoing radiation. If the outgoing radiation is high, the thermal screens should close sooner than if the outgoing radiation is low. This can be fully automated, since you can program your climate computer to adjust the outside temperature at which the screens close based on the outgoing radiation.

## Other options

It's also possible to incorporate the outgoing radiation measurements in your heating strategy. By anticipating the level of outgoing radiation, you can prevent the heating system from being set too high.

## New insights with new sensor technology

The Pyrgeometer allows you to explore new limits in climate control without taking risks. New developments in sensor equipment, such as this outgoing radiation sensor, or plant temperature, fruit temperature and PAR sensors enable you to measure and control virtually every environmental factor affecting your crop. The Pyrgeometer is fully supported by the MultiMa process computer.